

Threatened fishes of the Northern Territory

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Abstract

Fifty species of Northern Territory fishes have threatened species status according to several Acts and organisations. Almost half of these species (26) are elasmobranchs, of which 11 are whaler sharks (family Carcharhinidae). Nine other listed species are syngnathids (seahorses and pipefishes), which are speciose in the Northern Territory. Most of the different threatened species listings assign different levels of threat, although the two spartooth sharks, the Finke desert-goby, the four sawfish and the Angalarri grunter all share quite similar listings between the ASFB, EPBC and PWCNT. The poor state of knowledge of the Territory's fish populations has hindered the assessment processes.

Introduction

The Northern Territory has a diverse but not well-known fish fauna, occurring in desert waterholes to mangrove creeks and offshore over the continental shelf. About 1300 fish species are known from the Northern Territory (NT), a number of which are undescribed (H. Larson, in prep.). New fish species are still turning up in Darwin Harbour (e.g. Larson and Takita 2004), and a long-term study of coral reefs of the Cobourg Peninsula Marine Park is revealing many more fish records (V. Gomelyuk videotapes). There are few recent publications which summarise portions of the NT fish fauna, examples being Taylor's 1964 *Fishes of Arnhem Land* (the results of a 1948 American - Australian scientific expedition to eastern Arnhem Land), Larson and Martin's 1990 *Freshwater Fishes of the Northern Territory* and Larson and Williams' 1997 checklist of Darwin Harbour fishes.

The fish fauna is still not fully documented, and the status of the fish populations themselves is even less well-known, with the exception of some commercially important species such as Barramundi *Lates calcarifer* and Spanish Mackerel *Scomberoides commersonianus*. The first conservation listing of NT fishes was in Harris (1985) (the proceedings of the Australian Society for Fish Biology's (ASFB) first conference on Australian threatened fishes). This included only two NT species: the Exquisite Rainbowfish *Melanotaenia exquisita* and Midgley's Grunter *Pingalla midgleyi*, which were both listed as having restricted distributions. Provided below are the various national and international species listings and some comments on the present status of NT fish species.

Remarks

Since Harris' listing, additional research has added to our knowledge of NT fish distributions and the number of threatened species. Northern Territory threatened fish are now listed by the Australian Society for Fish Biology's Threatened Fish Committee (ASFB 2003), the International Union for the Conservation of Nature's Red List of Threatened Species 2003 (IUCN; <http://www.redlist.org/>), Pogonoski *et al.* (2002), the Commonwealth Government (under the *Environment Protection and Biodiversity Conservation Act 1999*) and the Parks and Wildlife Commission of the NT (PWCNT 2002; also online). All NT species with a threatened status under any of these bodies are shown in Table 1 (these are currently under review). The IUCN and ASFB list the greatest number of threatened NT species. Out of the total of 50 listed species, IUCN lists 49 and ASFB lists 38 species. They both agree that 14 of these (mostly marine) species are Data Deficient.

The EPBC Act protects fauna by listing species and communities within Commonwealth areas as well as protected (conservation) areas and is triggered by certain actions (e.g. a development proposal for an area inhabited by listed species). Listed fishes are afforded protection within Commonwealth waters, while the NT has its own legislation designed to protect fauna.

Pogonoski *et al.*'s (2002) "Conservation Overview and Action Plan for Australian Threatened and Potentially Threatened Marine and Estuarine Fishes" was simultaneously published in softcover and on the Environment Australia website in February 2002 (<http://www.deh.gov.au/coasts/species/marine-fish/index.html>). Pogonoski *et al.* (2002) includes an overview in some detail of the conservation status of 114 species of marine and estuarine fishes and incorporates information provided by the ASFB threatened fish committee as well as the results of a specialist workshop on Australian threatened fish populations.

Under the *Territory Parks and Wildlife Act 2000*, the PWCNT produced a list of threatened fauna of the NT, which included nine threatened fish species (three endangered and six vulnerable), in addition to listing 188 species as Near Threatened, Least Concern or Data Deficient (PWCNT 2002). The PWCNT list of threatened species is not always congruent with IUCN, EPBC or ASFB listings (Table 1). For example, the Freshwater Tongue Sole *Cynoglossus heterolepis* is an estuarine to freshwater species known from the Adelaide River to the East Alligator River and southern New Guinea (Allen 2001), that is not endangered or threatened, but was apparently listed by the PWCNT based on information in Allen *et al.* (2002). The main consensus between the ASFB, EPBC and PWCNT listings seems to be the two species of spartooth sharks *Glypis* sp. A and sp. C, Finke Desert-goby *Chlanzygobius japaipa*, Grey Nurse Shark *Carcharias taurus*, the four sawfish *Pristis* and *Anoxypristis*, and the Angalari Grunter *Scortum neili*. The PWCNT's *Strategy for the Conservation of Threatened Species and Ecological Communities in the Northern Territory of Australia* is a management tool for dealing with threatened taxa, but it does not mention aquatic species or fish.

Table 1. Fish species of conservation significance in the NT. IUCN = 2002 IUCN Red List of Threatened Species; EPBC = Environmental Protection and Biodiversity Conservation Act 1999; COAP = Pogonoski *et al.* (2002); ASFB = Australian Society for Fish Biology (2003); PWCNT = Parks and Wildlife Commission of the NT. CE = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Lower Risk (Near Threatened), LC = Lower Risk (Least Concern), LR = Lower Risk (Conservation Dependent), DD = Data Deficient. Species listed as Data Deficient by PWCNT (2002), but not elsewhere, are not included.

Species	IUCN	EPBC	COAP	ASFB	PWCNT
Ariidae					
<i>Cinetodus froggatti</i> Small-mouthed Catfish	DD	-	-	DD	-
Atherinidae					
<i>Craterocephalus centralis</i> Finke River Hardyhead	NT	-	-	NT	-
Carcharhinidae					
<i>Carcharhinus amblyrhynchos</i> Grey Reef Shark	NT	-	LC	-	-
<i>C. brevipinna</i> Spinner Shark	NT	-	LC	-	-
<i>C. falciformis</i> Silky Shark	LC	-	LC	-	-
<i>C. leucas</i> Bull Shark	NT	-	LC	-	-
<i>C. limbatus</i> Blacktip Shark	NT	-	DD	DD	-
<i>C. obscurus</i> Dusky Shark	NT	-	NT	NT	-
<i>C. plumbeus</i> Sandbar Shark	NT	-	NT	NT	-
<i>Galeocerdo cuvier</i> Tiger Shark	NT	-	LC	-	-
<i>Glyphis</i> sp. A Speartooth Shark	CE	CE	CR	CE	EN
<i>G.</i> sp. C Northern River Shark	CE	EN	EN	EN	EN
<i>Triaenodon obesus</i> Reef White-tip	NT	-	LC	-	-
Cynoglossidae					
<i>Cynoglossus heterolepis</i> Freshwater Tongue Sole	-	-	-	-	EN
Dasyatidae					
<i>Himantura chaophraya</i> Freshwater Whipray	VU	-	VU	VU	DD
<i>Taeniura lymma</i> Blue-spotted Fantail Ray	NT	-	LC	NT	-
<i>Urogymnus asperrimus</i> Porcupine Ray	VU	-	NT	NT	-
Eleotridae					
<i>Hypseleotris</i> sp. Katherine River Gudgeon	DD	-	-	DD	-
Engraulidae					
<i>Thryssa scratchleyi</i> Freshwater Anchovy	DD	-	-	DD	-
Gobiidae					
<i>Chlamydogobius japaipa</i> Finke Desert-goby	VU	-	-	VU	VU
<i>Silhouettea hoesei</i> Hoese's Silhouette Goby	DD	-	-	DD	-
Mobulidae					
<i>Manta birostris</i> Manta Ray	DD	-	LC	-	-

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Table 1 continued

Species	IUCN	EPBC	COAP	ASFB	PWCNT
Myliobatidae					
<i>Aetobatus narinari</i> White-Spotted Eagle Ray	DD	-	LC	-	-
Odontaspidae					
<i>Carcharias taurus</i> Grey Nurse Shark	VU	CE (E coast)	EN	EN	DD
Orectolobidae					
<i>Orectolobus ornatus</i> Banded Wobbegong	LC	-	DD	DD	-
Pristidae					
<i>Pristis microdon</i> Freshwater Sawfish	CR	VU	-	CE	DD
<i>P. clavata</i> Dwarf Sawfish	EN	-	-	EN	VU
<i>P. zijsron</i> Green Sawfish	EN	-	-	EN	VU
<i>Anoxypristis cuspidata</i> Narrow Sawfish	VU	-	-	VU	VU
Rhincodontidae					
<i>Rhincodon typus</i> Whale Shark	VU	VU	DD	DD	-
Rhinidae					
<i>Rhynchobatus australiae</i> White-Spotted Shovel-Nose Ray	VU	-	LC	-	-
Serranidae					
<i>Cromileptes altivelis</i> Barramundi Cod	LR	-	-	LR	-
<i>Epinephelus lanceolatus</i> Queensland Grouper	LR	-	-	LR	-
<i>E. coioides</i> Estuary Rockcod	LC	-	-	LC	-
<i>E. fuscoguttatus</i> Flowery Rockcod	LC	-	-	LC	-
<i>E. malabaricus</i> Malabar Grouper	LC	-	-	LC	-
Sphyrnidae					
<i>Sphyrna lewini</i> Scalloped Hammerhead	NT	-	LC	-	-
<i>S. mokarran</i> Great Hammerhead	DD	-	LC	-	-
Syngnathidae					
<i>Doryrhamphus dactyliophorus</i> Banded Pipefish	LC	-	-	LC	-
<i>Hippichthys parvicarinatus</i> Estuary Pipefish	LC	-	-	LC	-
<i>Hippocampus alatus</i> Winged Seahorse	DD	-	DD	DD	-
<i>H. dahli</i> Low-Crowned Seahorse	NT	-	-	NT	-
<i>H. multispinus</i> Northern Spiny Seahorse	DD	-	DD	DD	-
<i>H. taeniopterus</i> Yellow Seahorse	DD	-	DD	DD	-
<i>Solegnathus hardwickii</i> Pallid Pipehorse	DD	-	-	DD	-
<i>S. lettiensis</i> Gunther's Pipehorse	DD	-	-	DD	-
<i>Syngnathoides biaculeatus</i> Alligator Pipefish	DD	-	-	DD	-
Terapontidae					
<i>Pingalla lorentzi</i> Lorentz' Grunter	-	-	-	-	VU
<i>P. midgleyi</i> Midgley's Grunter	NT	-	-	NT	-
<i>Scortum neilli</i> Angalarri Grunter	NT	-	-	NT	VU
Xiphiidae					
<i>Xiphias gladius</i> Broadbill Swordfish	DD	-	DD	DD	-

The seahorses, genus *Hippocampus* (Table 1), are all IUCN Red-listed (one species listed as Endangered, 20 Vulnerable and 11 Data Deficient). In addition, there is considerable confusion over the correct names for each species. No revision of the whole genus has yet been carried out, although Kuitert (2001) attempted to identify and name the Australian species. There are 33 *Hippocampus* species presently listed by the IUCN. Five seahorse species occur in the NT, but none of the names currently used for the NT species appear on the IUCN list, due to the nomenclatural confusion. The species are concealed and confused with other names on the list, and the three recently described NT species (Kuitert 2001) do not appear on the IUCN list. Work is continuing on *Hippocampus* species by Sara Lourie of McGill University, and it is hoped that this charismatic group of fishes will soon be better understood.

Of the 51 species listed in Table 1, 26 are elasmobranchs (sharks, rays and sawfish). These large and often slow-growing fishes have been recognised as being highly vulnerable to fishing as a threatening process, either as bycatch or as target species (Pogonoski *et al.* 2002). Some of these are large and charismatic; for example the Freshwater Sawfish *Pristis microdon*, which reaches about 4.6 m (Allen *et al.* 2002), and is Australia's largest freshwater fish, famous for waiting out the dry season in remote areas in small waterholes. Of the listed elasmobranchs, 11 belong to the family Carcharhinidae (whaler sharks). This family includes not only the spartooth sharks (*Glyptis* sp. A and C) and the Tiger Shark *Galeocerdo cuvieri*, but also the various blacktip and grey whalers which are taken commercially in NT waters. In recent years there has been considerable effort expended to determine the status of various elasmobranch populations, resulting in a number of species receiving IUCN Red List status.

The undescribed *Glyptis* species are both listed as Critically Endangered by the IUCN (2002), and as Endangered under the Territory Parks and Wildlife Conservation Act 2000, but no NT management program is in preparation (PWCNT 2002). A national Recovery Plan for *Glyptis* is currently being drafted. *Glyptis* sp. A and *Glyptis* sp. C are known to inhabit several rivers in the NT, but their exact distributions and population numbers are not known. Museum and Art Gallery of the Northern Territory records and sight records of visiting researcher Tim Berra (in litt.) indicate that juvenile *Glyptis* sp. C may be common in the Adelaide River.

The 25 non-elasmobranch Near-Threatened category fish in Table 1 are mostly commercially significant (e.g. groupers, rock cods), syngnathids (seahorses and pipefishes) or small freshwater species (e.g. grunters). Some freshwater fish have very restricted distributions, making them vulnerable to changes in water quality, flow, condition or competition from introduced species. For example, the Finke River Hardyhead *Craterocephalus centralis* and the Finke Desert-goby *Chlamydogobius japaipa* are known only from the Finke River system in central Australia, and the hardyhead is the only species of the genus in that system. Both these species are highly vulnerable to the potential effects of any introduced species (which have been found in waterways not far from the Finke system), such as *Gambusia holbrooki* (the inappropriately-named mosquitofish) recently removed from Ilparpa Swamp and the Murray Cod

Maccullochella peelii recently found to be illegally introduced into Policeman Waterhole in the Davenport Ranges. The NT has been fortunate so far in that most occurrences of introduced exotic or noxious fish species have been dealt with successfully or otherwise contained (e.g. the removal of Jewel Cichlids *Hemicromis bimaculatus*, from Ludmilla Creek at Fannie Bay) and that Northern Territory Fisheries has an active aquatic pest team to deal with such outbreaks.

Terrestrial parks and reserves within the NT provide some protection to threatened fish species, as do the few marine protected areas. There are only three of the latter: two small Aquatic Life Reserves in Darwin Harbour (at Doctors' Gully and East Point) and one large Marine Park (Garig Gunak Barlu National Park, previously known as Cobourg Marine Park). The Commonwealth-administered Kakadu National Park includes several major river estuaries and islands as well as a range of freshwater habitats. Taking of fish (by hook and line) is permitted in the National Parks, but not in the Aquatic Life Reserves.

The Northern Territory *Fisheries Act 1988* is intended for the management and conservation of marine fishes, utilising Fisheries Management Plans to "conserve, enhance, protect, utilise, and manage the fisheries of the Territory". So far, fish species in the NT are only protected by bag limits on several species, commercial fishing closures and the difficulty of access to many habitats. No species are wholly protected under NT legislation other than groupers of the genus *Epinephelus* larger than 1.2 m long (this protects adult females of the Giant Grouper *Epinephelus lanceolatus*).

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The Northern River Shark *Glyphis* sp. C occurs in several Top End rivers and is thought to be Endangered, perhaps critically so. (Helen Larson)